

WHAT IS CLAIMED IS:

1 *Sub B17* 1. A method for specifying at least one characteristic of at least one pulse,
2 comprising:
3 generating at least one code having at least one code element value; and
4 associating said at least one code element value with at least one non-temporal
5 pulse characteristic.

1 2. The method of claim 1, wherein said non-temporal pulse characteristic is a
2 pulse width characteristic.

1 3. The method of claim 1, wherein said non-temporal pulse characteristic is a
2 pulse amplitude characteristic.

1 4. The method of claim 1, wherein said non-temporal pulse characteristic is a
2 pulse polarity characteristic.

1 5. The method of claim 1, wherein said non-temporal pulse characteristic is a
2 pulse type characteristic.

1 *Sub B17* 6. The method of claim 1, wherein said code element values are associated with
2 at least one temporal pulse characteristic in addition to said at least one non-temporal pulse
3 characteristic.

1 7. The method of claim 6, wherein said temporal pulse characteristic
2 corresponds to a pulse position in time.

1 8. The method of claim 1, wherein each of said code element values comprises
2 an integer or floating-point value.

1 9. The method of claim 1, wherein each of said code element values indicate any
2 one of:

3 at least one component;

4 at least one sub-component of said component; and

5 at least one smaller component of said sub-component established by
6 recursively breaking down said sub-component into smaller parts,

7 wherein said at least one component, said at least one sub-component, and said
8 at least one smaller component are defined within at least one layout comprising a range of
9 non-temporal pulse characteristic values.

1 10. The method of claim 9, wherein any one of said at least one component is any
2 one of:

3 a same size; and

4 a different size

5 than others of said at least one component, and

6 wherein any one of said at least one sub-component is any one of:

7 a same size; and

8 a different size

9 than others of said at least one sub-component, and

10 wherein any one of said at least one smaller component is any one of:

11 a same size; and

12 a different size

13 than others of said at least one smaller component.

1 11. The method of claim 9, wherein said at least one component, said at least one
2 sub-component, and said any number of smaller components comprise at least one non-
3 allowable region established by at least one rule.

1 12. The method of claim 11, wherein said at least one rule establishing at least one
2 non-allowable region is based on any one of:

3 a minimum value; and

4 a maximum value,

5 of any one of:

6 said at least one component;

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7 said at least one sub-component; and
8 said any number of smaller components.

1 13. The method of claim 11, wherein said at least one rule establishing at least one
2 non-allowable region is based on minimum and maximum values within any one of:

3 said at least one component;
4 said at least one sub-component; and
5 said any number of smaller components,
6 within a layout.

1 14. The method of claim 11, wherein said at least one rule establishing at least one
2 non-allowable region is based on at least one non-temporal characteristic value of at least one
3 other pulse.

1 15. The method of claim 14, wherein said at least one rule establishes a minimum
2 value difference or a maximum value difference.

1 16. The method of claim 14, wherein said at least one rule establishes a region
2 bounded by a minimum and maximum value difference.

1 17. The method of claim 9, wherein an established offset value is used to specify
2 an exact non-temporal characteristic value within any one of:

3 said at least one component;
4 said at least one sub-component; and
5 said any number of smaller components indicated by said code element value.

1 18. The method of claim 17, wherein an absolute offset value is added to the
2 minimum value of the component, sub-component, or smaller component to which the code
3 element value is mapped.

1 19. The method according to claim 17, wherein a relative offset value is used to
2 specify a value that is a fraction of the difference between the minimum value and maximum
3 value of any one of:

4 said at least one component;
5 said at least one sub-component; and
6 said any number of smaller components.

1 20. The method of claim 19, wherein a fractional part of a floating-point code
2 element value comprises said relative offset value.

1 21. The method according to claim 4, wherein a polarity of said pulse indicates
2 whether said pulse is inverted.

1 22. The method according to claim 5, wherein the type of said pulse indicates
2 whether said pulse is any one of:

3 a square wave pulse;
4 a sawtooth pulse;
5 a Haar wavelet pulse;
6 a Gaussian monopulse;
7 a doublet pulse;
8 a triplet pulse; and
9 a set of wavelets.

1 23. The method according to claim 1, wherein each code element value
2 corresponds to a value defined within a layout comprising discrete non-temporal pulse
3 characteristic values.

1 24. The method according to claim 1, wherein each code element value
2 corresponds to a value defined within a layout comprising a range of non-temporal pulse
3 characteristic values and discrete non-temporal pulse characteristic values.

1 25. The method according to claim 9, wherein said layout is a delta value layout.

1 26. An impulse transmission system comprising:
2 a Time Modulated Ultra Wideband Transmitter;

3 a Time Modulated Ultra Wideband Receiver; and
4 said Time Modulated Ultra Wideband Transmitter and said Time Modulated
5 Ultra Wideband Receiver employ at least one code, wherein said code has at least one code
6 element value, and said code element values are associated with at least one non-temporal
7 pulse characteristic.

1 27. The impulse transmission system of claim 26, wherein said non-temporal
2 pulse characteristic is a pulse width characteristic.

1 28. The impulse transmission system of claim 26, wherein said non-temporal
2 pulse characteristic is a pulse amplitude characteristic.

1 29. The impulse transmission system of claim 26, wherein said non-temporal
2 pulse characteristic is a pulse polarity characteristic.

1 30. The impulse transmission system of claim 26, wherein said non-temporal
2 pulse characteristic is a pulse type characteristic.

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SUB 17 1 31. The impulse transmission system of claim 26, wherein said code element
2 values are associated with at least one temporal pulse characteristic in addition to said at least
3 one non-temporal pulse characteristic.

1 32. The impulse transmission system of claim 31, wherein said temporal pulse
2 characteristic corresponds to a pulse position in time.

1 33. The impulse transmission system of claim 26, wherein each of said code
2 element values comprises an integer or floating-point value.

1 34. The impulse transmission system of claim 26, wherein each of said code
2 element values indicate any one of:

3 at least one component;

4 at least one sub-component of said component; and

5 at least one smaller component of said sub-component established by
6 recursively breaking down said sub-component into smaller parts,

7 wherein said at least one component, said at least one sub-component, and said
8 at least one smaller component are defined within at least one layout comprising a range of
9 non-temporal pulse characteristic values.

1 35. The impulse transmission system of claim 34, wherein any one of said at least
2 one component is any one of:

3 a same size; and

4 a different size

5 than others of said at least one component, and

6 wherein any one of said at least one sub-component is any one of:

7 a same size; and

8 a different size

9 than others of said at least one sub-component, and

10 wherein any one of said at least one smaller component is any one of:

11 a same size; and

12 a different size

13 than others of said at least one smaller component.

1 36. The impulse transmission system of claim 34, wherein said at least one
2 component, said at least one sub-component, and said any number of smaller components
3 comprise at least one non-allowable region established by at least one rule.

1 37. The impulse transmission system of claim 36, wherein said at least one rule
2 establishing at least one non-allowable region is based on any one of:

3 a minimum value; and

4 a maximum value,

5 of any one of:

6 said at least one component;

7 said at least one sub-component; and

8 said any number of smaller components.

1 38. The impulse transmission system of claim 36, wherein said at least one rule
2 establishing at least one non-allowable region is based on minimum and maximum values
3 within any one of:

4 said at least one component;

5 said at least one sub-component; and

6 said any number of smaller components,

7 within a layout.

1 39. The impulse transmission system of claim 36, wherein said at least one rule
2 establishing at least one non-allowable region is based on at least one non-temporal
3 characteristic value of at least one other pulse.

1 40. The impulse transmission system of claim 39, wherein said at least one rule
2 establishes a minimum value difference or a maximum value difference.

1 41. The impulse transmission system of claim 39, wherein said at least one rule
2 establishes a region bounded by a minimum and maximum value difference.

1 42. The impulse transmission system of claim 34, wherein an established offset
2 value is used to specify an exact non-temporal characteristic value within any one of:

3 said at least one component;

4 said at least one sub-component; and

5 said any number of smaller components indicated by said code element value.

6 43. The impulse transmission system of claim 42, wherein an absolute offset value
7 is added to the minimum value of the component, sub-component, or smaller component to
8 which the code element value is mapped.

1 44. The impulse transmission system according to claim 42, wherein a relative
2 offset value is used to specify a value that is a fraction of the difference between the
3 minimum value and maximum value of any one of:

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4 said at least one component;
5 said at least one sub-component; and
6 said any number of smaller components.

1 45. The impulse transmission system of claim 44, wherein a fractional part of a
2 floating-point code element value comprises said relative offset value.

1 46. The impulse transmission system according to claim 29, wherein a polarity of
2 said pulse indicates whether said pulse is inverted.

1 *sub B17* 47. The impulse transmission system according to claim 30, wherein the type of
2 said pulse indicates whether said pulse is any one of:

- 3 a square wave pulse;
- 4 a sawtooth pulse;
- 5 a Haar wavelet pulse;
- 6 a Gaussian monopulse;
- 7 a doublet pulse;
- 8 a triplet pulse; and
- 9 a set of wavelets.

1 48. The impulse transmission system according to claim 26, wherein each code
2 element value corresponds to a value defined within a layout comprising discrete non-
3 temporal pulse characteristic values.

1 49. The impulse transmission system according to claim 26, wherein each code
2 element value corresponds to a value defined within a layout comprising a range of non-
3 temporal pulse characteristic values and discrete non-temporal pulse characteristic values.

1 50. The impulse transmission system according to claim 34, wherein said layout is
2 a delta value layout.